Virginia Information Technologies Agency

Elevation Framework Initiative Action Team

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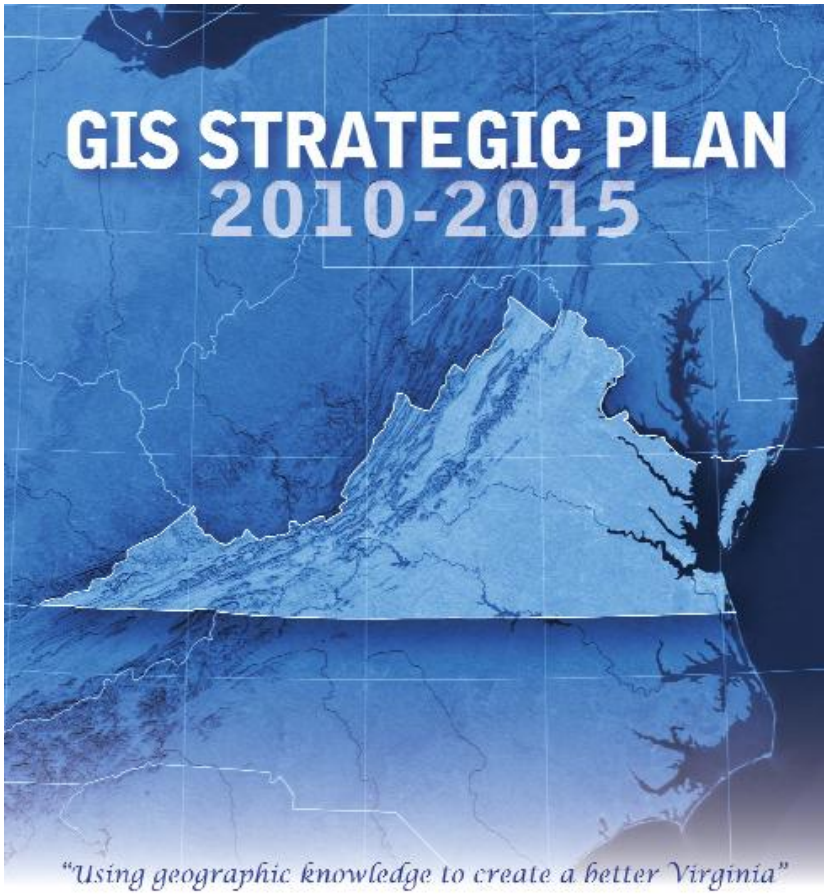
Geospatial Projects Manager

VGIN Board Meeting
May 20, 2010

Elevation FIAT

- From recently adopted 2010-2015 strategic plan
- Implements

  Initiative 5 – Provide framework data layers



FIAT Lifecycle

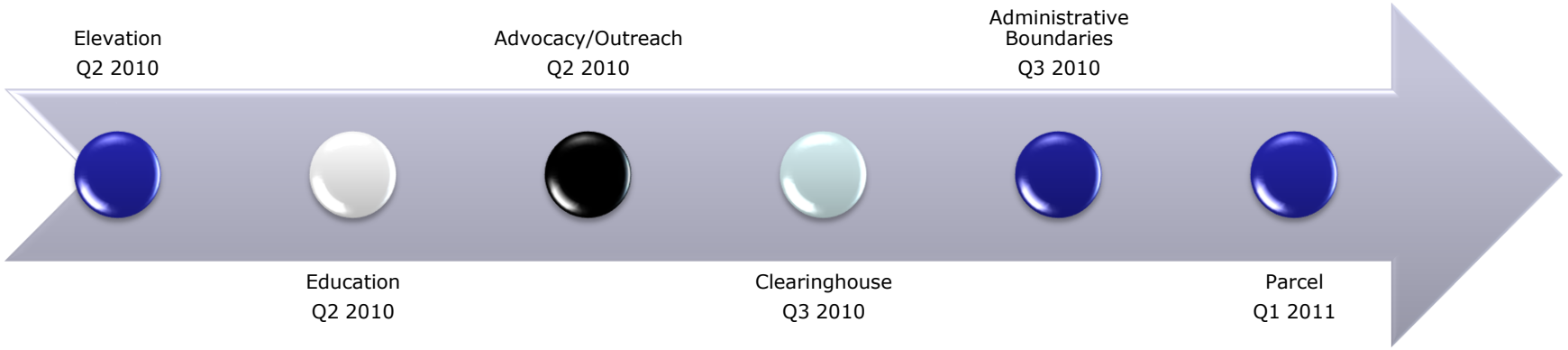
1. *Publish call for participation*
2. **Establish membership and charter**
3. Develop prioritized work plan
4. Work the plan
5. Report progress to VGIN Board through VGIN Coordinator
6. Close out workgroup when complete

Standards

- Developed by each FIAT for their particular theme.
- General approach is to start at a high level, simple statewide data standard that provides:
  - 1) a method for localities and state agencies to share minimum, essential data, and
  - 2) a standard that will provide the mechanism for clearinghouse inputs and outputs connectivity.

The objective is to be able to move fairly quickly with a state standard for practical use in the clearinghouse.

Proposed Strategic Planning Schedule



Agenda

10:00 am Welcome *Dan Widner, VGIN Coordinator*

10:05 am The Elevation FIAT – Process Overview, *John Scrivani, VGIN*

10:15 am LiDAR Technology & Products, *Brian Mayfield, Dewberry*

10:45 am FEMA Flood Mapping & Elevation Needs, *Jon Janowicz, FEMA*

11:15 am Roundtable Discussion of Elevation Needs in Virginia *(all)*

11:45 am Lunch (on your own)

1:00 pm USGS and the National Elevation Dataset, *USGS*

1:30 pm Visualizing and Using LiDAR Data, *Rick Vincent*, *Sanborn*

2:00 pm FIAT Charter and Next Steps *(all participants)*

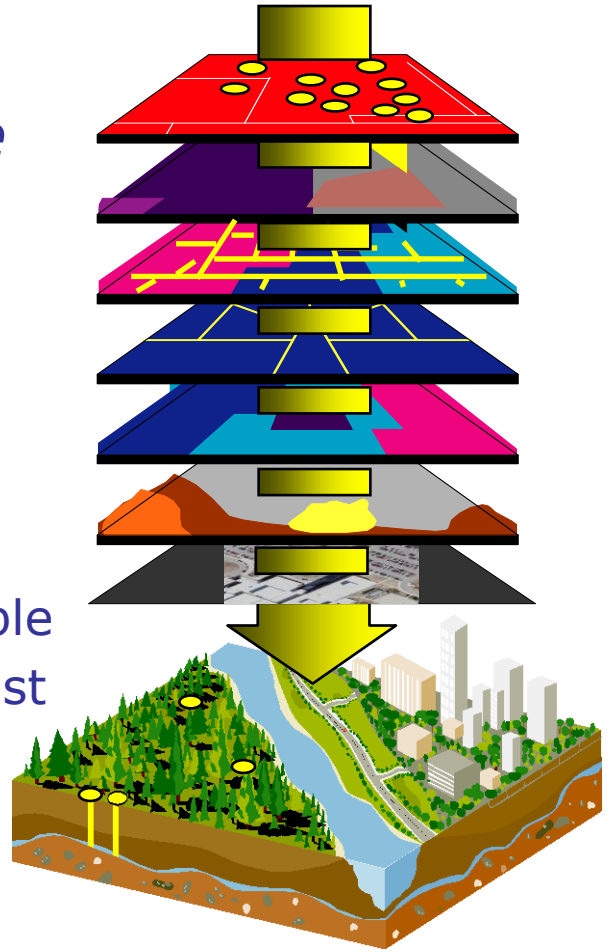
3:00 pm Adjourn

Framework Layers

"*themes of geospatial data that are used by most GIS applications*"
OMB Circular A-16

Framework layers are:

- Needed for many diverse purposes
- Needed across all jurisdictions
- Needed to be standardized and compatible
- Too expensive to be created and used just once
- Amenable to economies of scale



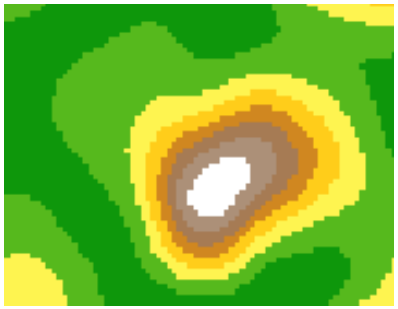
OMB A-16 Definition

Elevation Terrestrial:

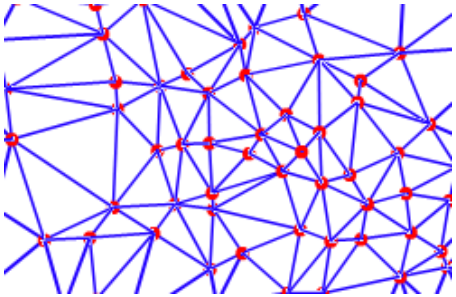
This data contains georeferenced digital representations of terrestrial surfaces, natural or manmade, which describe ***vertical position above or below a datum surface***. Data may be encapsulated in an evenly spaced grid (raster form) or randomly spaced (triangular irregular network, hypsography, single points). The elevation points can have varying horizontal and vertical resolution and accuracy.

Elevation data forms

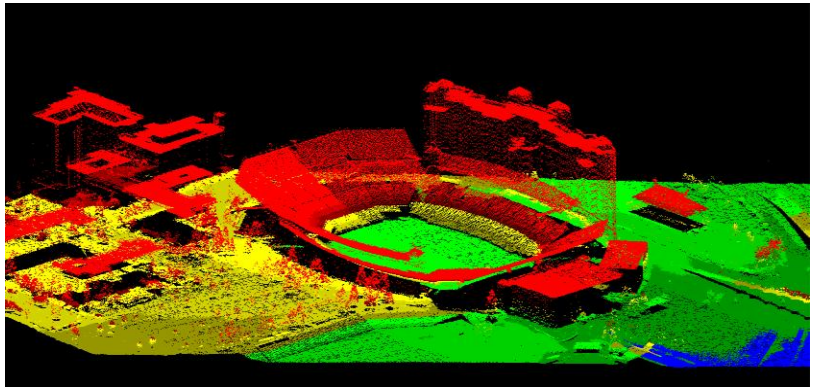
Raster DEM



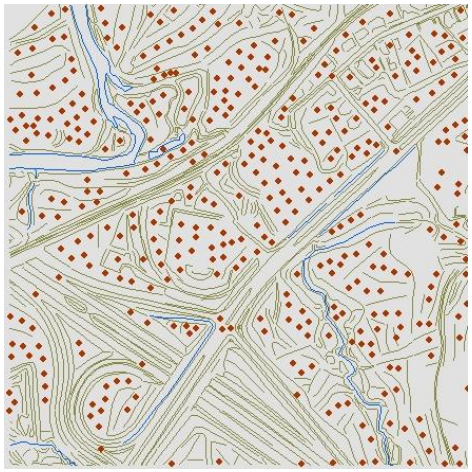
TIN



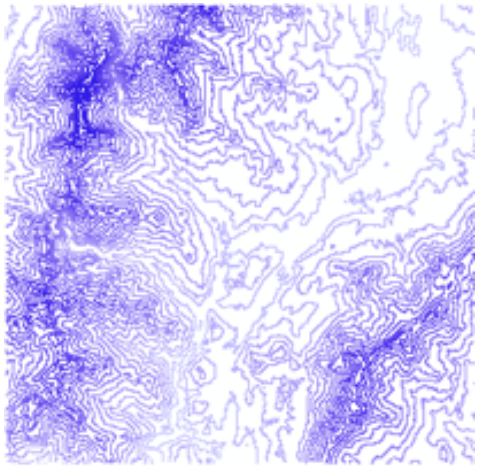
Point Clouds



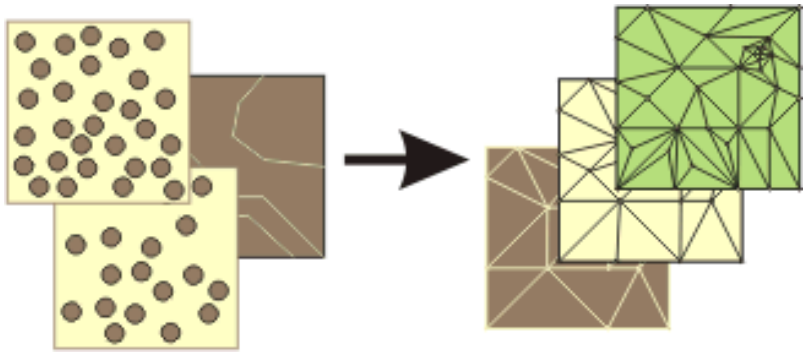
DTM



Contours

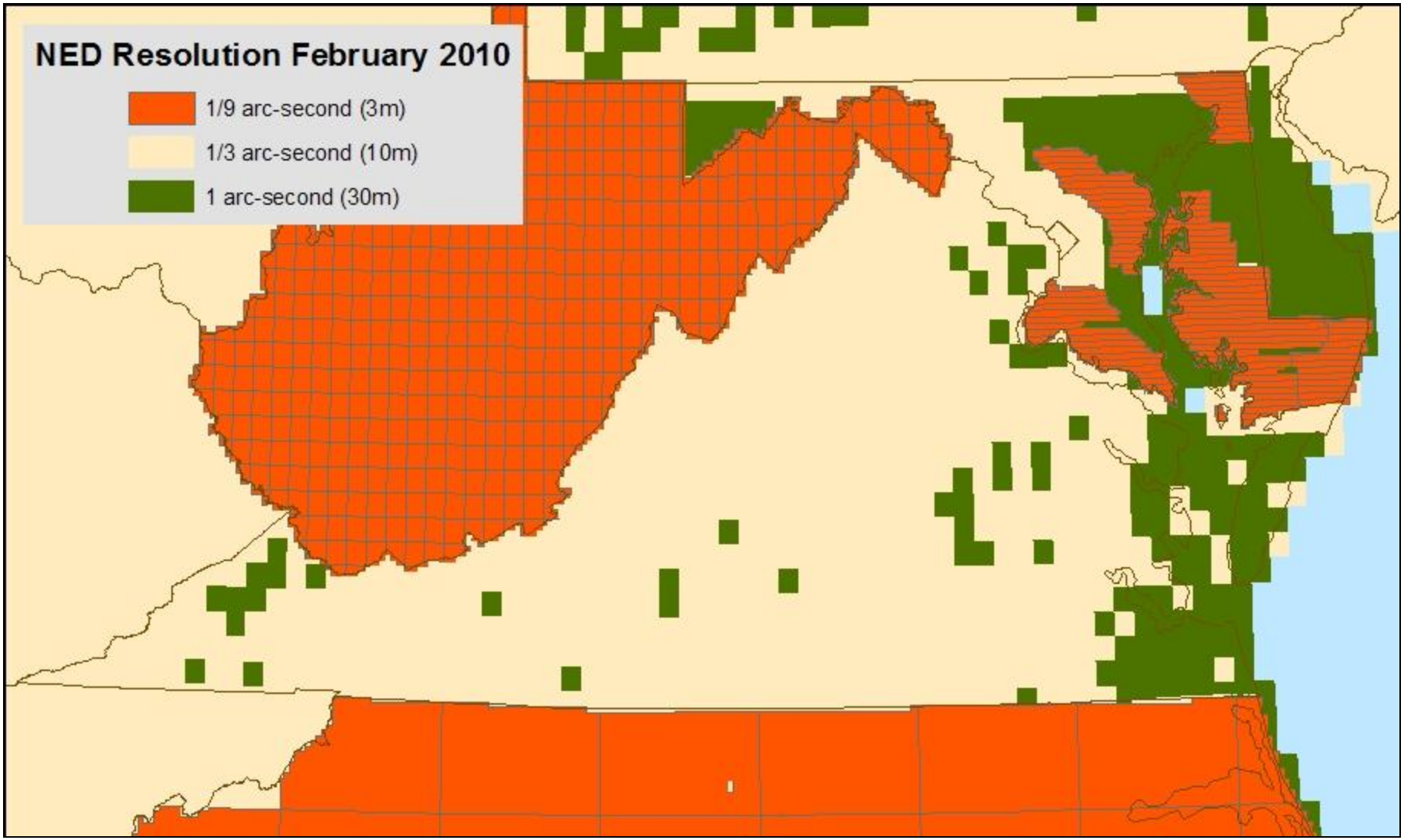


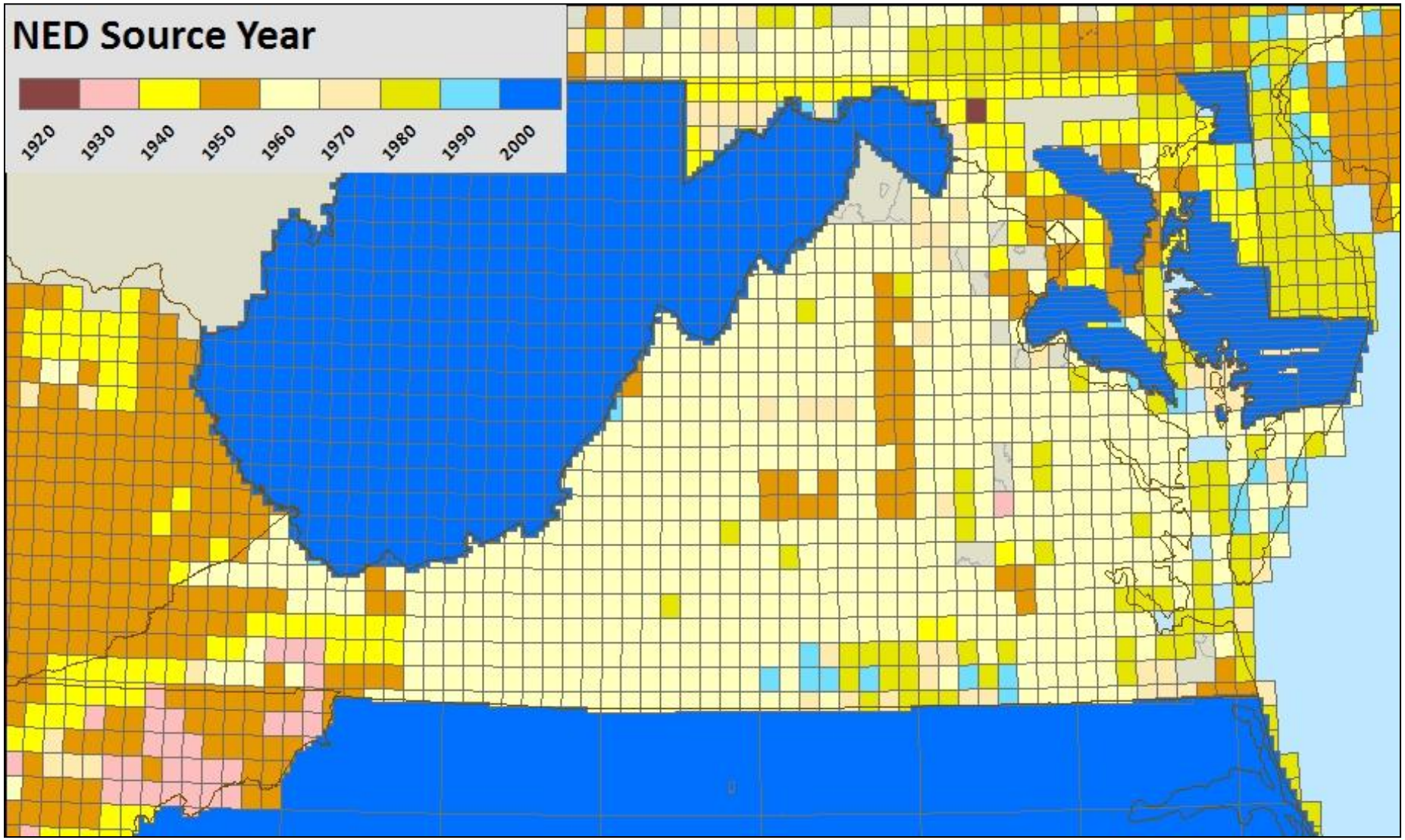
Terrains



National Elevation Dataset

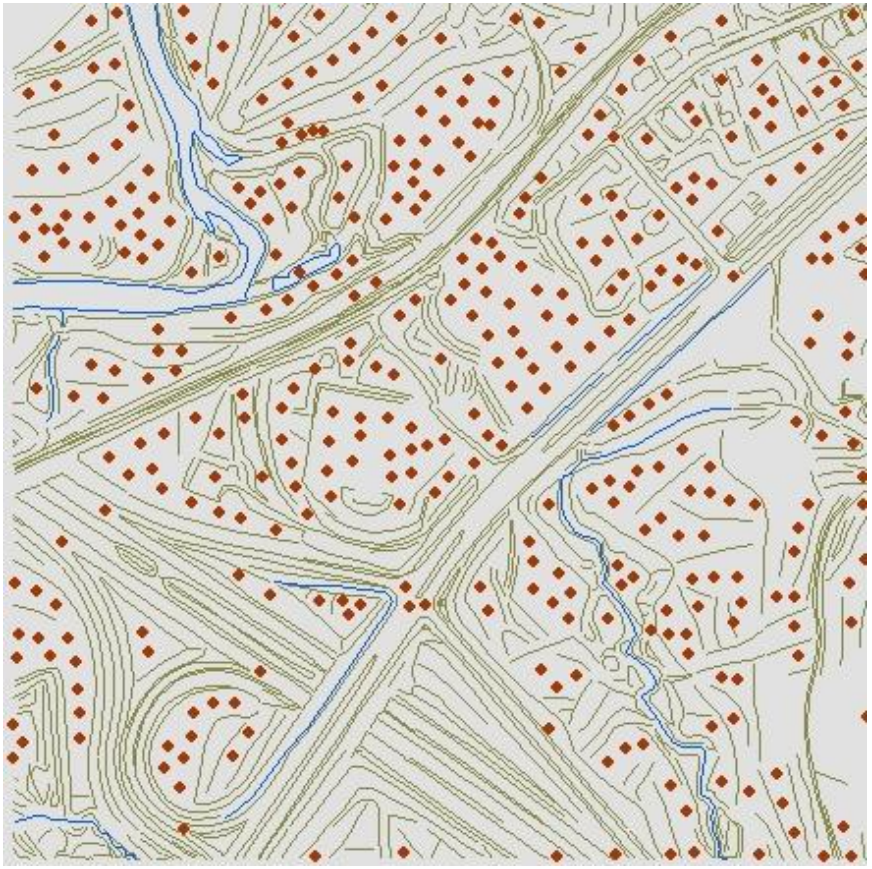
- 1997 completion
- Seamless grid of
  - 30 meter (1 arc-seconds)
  - 10 meter (1/3 arc-seconds)
  - 3 meter (1/9 arc-seconds)
- Overall vertical accuracy (RMSE) 2.44 m
- Source – Topographic quads


NED Resolution February 2010
1/9 arc-second (3m)
1/3 arc-second (10m)
1 arc-second (30m)

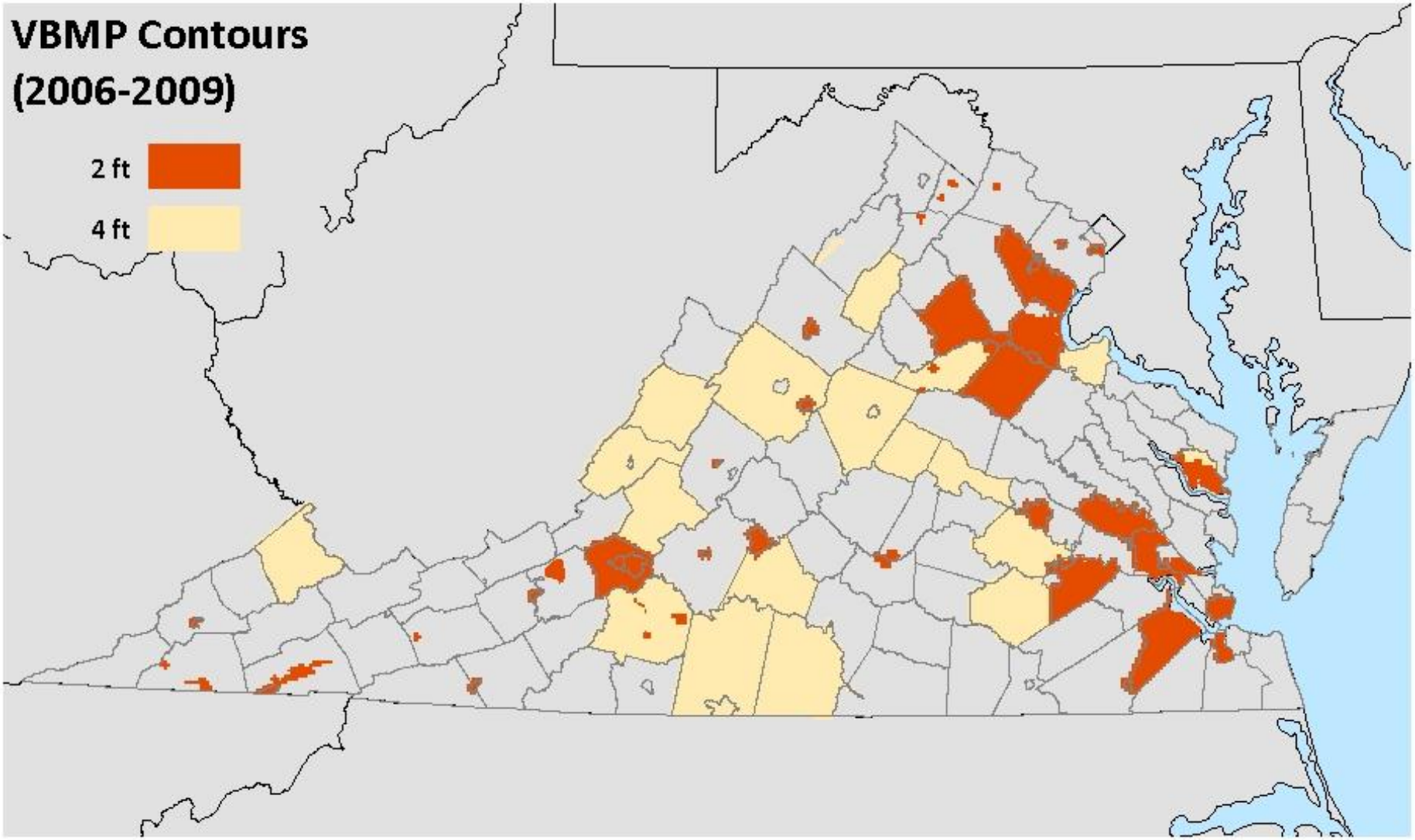

NED Source Year
1920
1930
1940
1950
1960
1970
1980
1990
2000

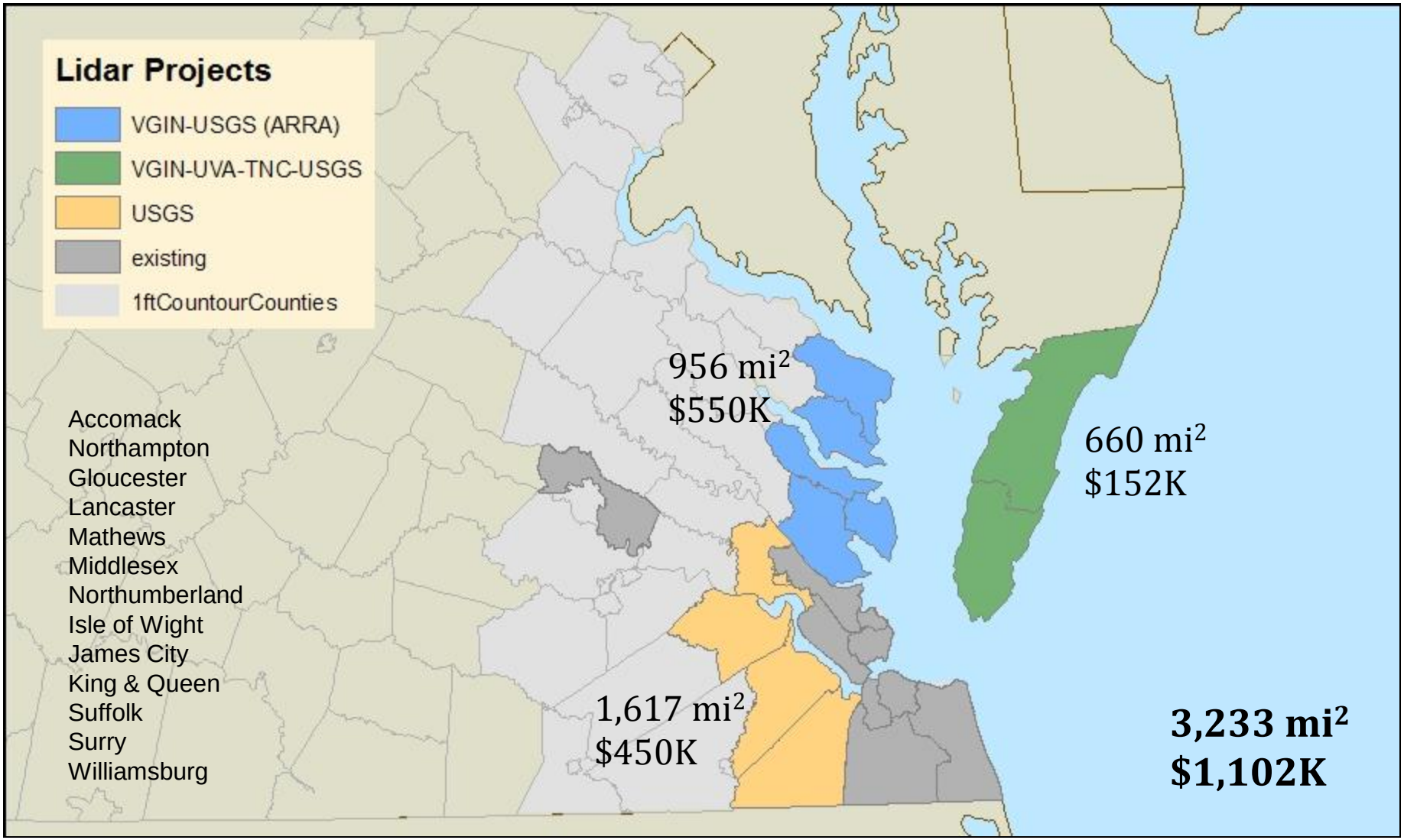
DTM & Contours from VBMP Ortho Program

- 2002, 2006, 2007, 2009
- Orthorectification
- DTM
- Derived contours

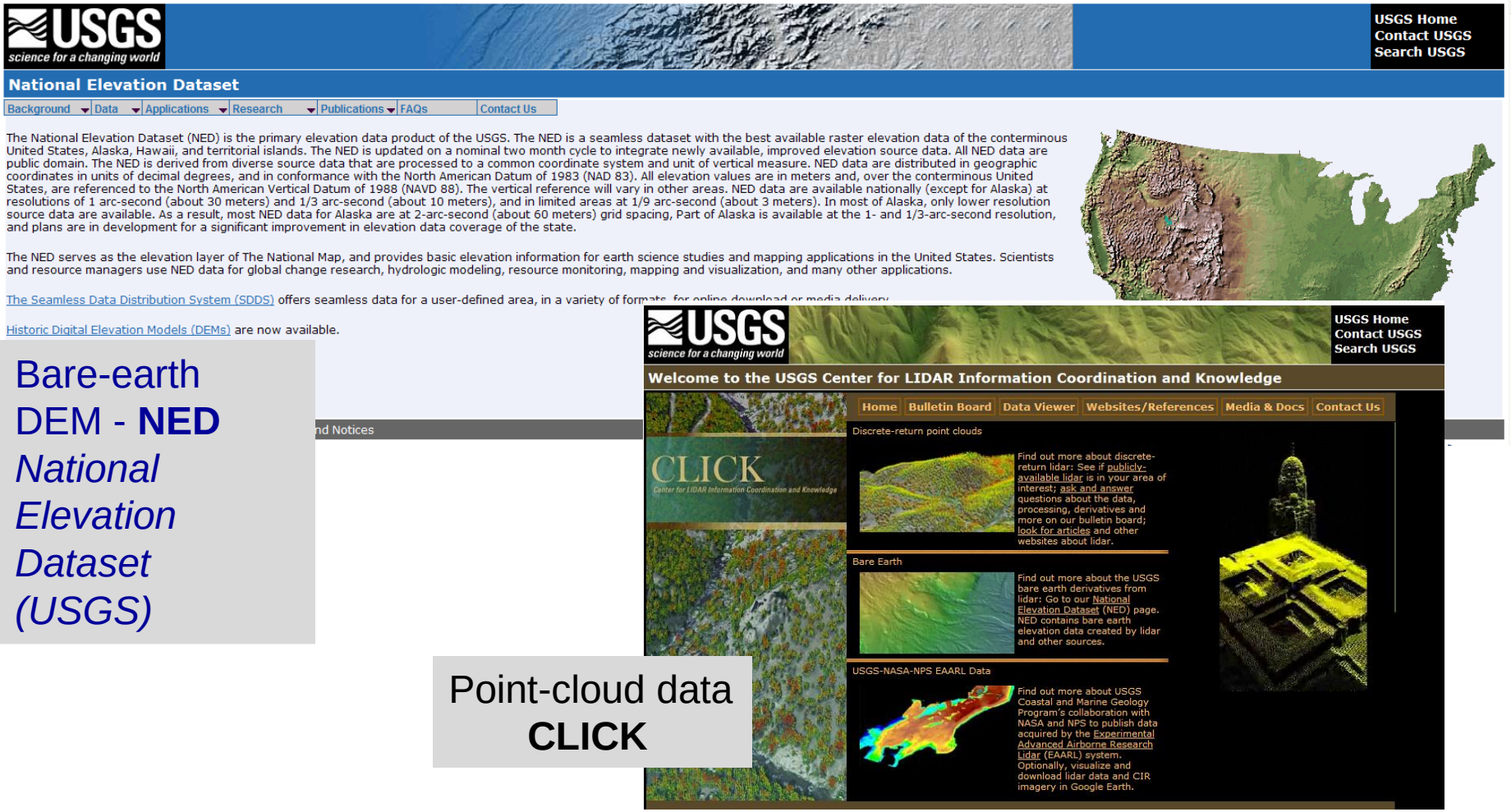


DTM – Digital Terrain Model


VBMP Contours
(2006-2009)
2 ft
4 ft


Lidar Projects
VGIN-USGS (ARRA)
VGIN-UVA-TNC-USGS
USGS
existing
1ftCountourCounties
956 mi²
$550K
660 mi²
$152K
1,617 mi²
$450K
3,233 mi²
$1,102K
Accomack
Northampton
Gloucester
Lancaster
Mathews
Middlesex
Northumberland
Isle of Wight
James City
King & Queen
Suffolk
Surry
Williamsburg

Clearinghouses



Bare-earth DEM - **NED** *National Elevation Dataset (USGS)*

Point-cloud data **CLICK**

Previous Efforts

LiDAR Cost Benefit Analysis

- Led by Sam Hall
- August 2007 Summit
- Early 2008 Stakeholder Survey

87% used elevation

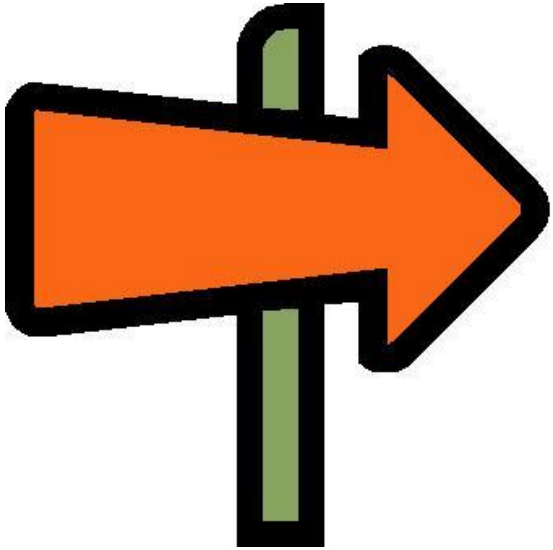
Survey Monkey

72% resolution

58% accuracy

46% currency

Business Objective (2008)



- Compile or acquire statewide elevation data that is of sufficient design, accuracy, and resolution to meet the business needs of the broadest possible stakeholder group in the Commonwealth of Virginia.
- These stakeholders include local, state, and federal government agencies, non-profit and non-governmental organizations, private sector businesses, and private citizens.

Elevation FIAT – Possible Tasks

- *Conduct an **inventory** of existing elevation datasets*
- *Recommend elevation data **standards** and **best practices***
- *Promote **coordination** and collaboration on the development of new elevation datasets*
- *Promote **data sharing** and incorporate elevation data in the existing clearinghouses*